



**NAUTICAL CHART MANUAL - VOLUME 1 - POLICIES AND PROCEDURES**  
Seventh (1992) Edition

**CHAPTER 8 - TRAINING**

**U.S. Department of Commerce  
Office of Coast Survey**



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL OCEAN SERVICE  
Office of Coast Survey  
Silver Spring, Maryland 20910-3282

JULY 19, 2000

MEMORANDUM FOR: All Cartographers  
Marine Chart Division

FROM: Fannie B. Powers  
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Chapter 8

Effective immediately, the attachment replaces Chapter 8 in the Nautical Chart Manual, Volume 1, Part 2, Seventh (1992) Edition in its entirety.

Chapter 8 is revised as follows:

1. MCD Training Program is updated.
2. Acronyms are revised.
3. Pages are renumbered.

References to Chapter 8 in places, such as the Table of Contents and the Index in the Nautical Chart Manual, will be updated.

Attachment

## **NAUTICAL CHART MANUAL**

### **8 TRAINING**

#### **8.1 General**

The training of new cartographers in MCD is informal and begins with a brief orientation and tour through the Division's areas by an experienced person. This is followed by detailed on-the-job training.

The extent of training in the field of nautical cartography will depend on the employee's background. Additional training concerning varied specialized duties may be required. The initial orientation and the follow-up training program are both organized to correspond to the current flow of data and processes used in the production of MCD's marine products.

#### **8.2 Individual and Group Training Program**

During early career years each employee receives a variety of training. This varied background exposure will enable the employee to perform effectively in any position.

Reliance on the Nautical Chart Manual is stressed throughout the employees training and career. It is the only authoritative reference document concerning NOS nautical charting policies, procedures, and standards.

##### **8.2.1 Nautical Data Branch**

The receipt and disposition of new source data is the first area of the training program. Training includes the following:

1. Orientation
  - a. Functional statement and general orientation
  - b. Marine litigation
  - c. Evaluating and registering of source data
  - d. Interaction with suppliers of source data
  - e. Providing charting information to cartographers
  - f. Inspecting charts for status and disposition of source data prior to publication of chart

## **Section 8.2.2**

## **NAUTICAL CHART MANUAL**

### **8.2.2 Notice to Mariners Update Service**

a. Preparation and coordinating critical changes to NOS Nautical Products through Local Notices to Mariners (LNM's), Notices to Mariners (NM's), Print on Demand Charts, Web Sites, Non-Federal Partnerships, and the lithographic chart:

- (1) Purpose of [LNM](#)'s and [NM](#)'s
- (2) Authorities for notices; [NIMA](#), [USCG](#), and [foreign authorities](#)
- (3) Explanation of the various types and forms of presentation, e.g., textual, tabulations, [chartlets](#), and updated raster files
- (4) How notices are used by mariners
- (5) Types of products used to disseminate critical corrections
- (6) Definitions of various types of [aids](#)
- (7) Review of principles of aids placement

b. Interaction with the USCG

c. Interaction with non-federal partners

d. Interaction with NGA

e. Interactions within NOAA

f. Inspecting charts for status and disposition of aid to navigation information prior to publication of chart

g. Computer training in specialized databases and hybrid software

### **8.2.3 Production Branches**

The cartographer is introduced to the various methods of cartographic assimilation of source data into the final nautical chart product; time is variable and is tailored to the needs of the individual. The new cartographer is paired up with an experienced cartographer who will familiarize them with the following:

1. Compilation work area (on-the-job training)

## NAUTICAL CHART MANUAL

## Section 8.2.3

- a. Reading of the selected sections of the Nautical Chart Manual for work familiarity, with concentration on compilation specifics as the subject arises
- b. Computer training in Microstation, IrasB, and the various other computer programs and software necessary to create digital nautical products
- c. General
  - (1) Explanation of the general purpose of charts and how they are used
  - (2) General overview of the steps in the production of a new chart
  - (3) A general description of the symbols and abbreviations and their application to nautical charts
- d. Hydrography
  - (1) Description of various sources of Hydrographic Data and their various levels of authority to make changes to NOS nautical products:
    - 1. [NOS surveys](#)
    - 2. [USACE surveys](#)
    - 3. Cooperative charting programs
    - 4. Port Authorities, Private Companies, Individuals, etc.
  - (2) Description of [horizontal control](#); types of control points; use of control points in surveying *and in chart construction*
  - (3) Instruction in how to handle surveys on a variety of mediums:
    - 1. Paper blueprints that need to be scaled and fit (oriented to charts)
    - 2. Various digital formats requiring transformation, scaling, and rotation to fit working area of chart
  - (4) [Sounding selection](#) and [depth curves](#), generalization of selected features
  - (5) [Legends](#) and [tabulations](#)

## **Section 8.2.3**

## **NAUTICAL CHART MANUAL**

(6) Critical changes and notification of the public through Notices to Mariners, chartlets, and new editions

(7) Computer training in specialized databases and hybrid software

### e. Source data

(1) Examination of the various sources of information and the type of data provided

(2) Assessment of data sources e.g., USACE surveys, tabulations and permits; data from private companies; data from foreign agencies; etc.

(3) Cooperative Charting Program; interaction between the National Ocean Service, the U.S. Power Squadrons, and the U.S. Coast Guard Auxiliary

### f. Compilation of source data

(1) New data: surveys, cables, breakwaters, wharves, channels; techniques of incorporating new data onto digital products and recording changes on digital histories

(2) Topography for charts, what and how much to show

(3) Note placement, location of title, compass roses, notes, tide boxes, legends, various scales, etc.

(4) Presentation of magnetic information and the software required to update it

(5) Writing of Notices to Mariners for Critical Corrections

### g. Aerial Photography

(1) Explanation of use of aerial photography

### h. Compilation review

(1) Identification of the various levels of review and inspection, the types of data reviewed by each

(2) Explanation of compilation review procedures



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL OCEAN SERVICE  
Office of Coast Survey  
Silver Spring, Maryland 20910-3282

NOVEMBER 30, 1999

MEMORANDUM FOR: All Cartographers  
Marine Chart Division

FROM: Fannie B. Powers  
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Chapter 8

Effective immediately, the attachment replaces the following Chapter 8 pages of the Nautical Chart Manual, Volume 1, Part 2, Seventh (1992) Edition:

1. Page 8-5 / Page 8-6

In an effort to bring the analog edition of the Nautical Chart Manual into agreement with its digital counterpart, the attachment contains only minor grammatical changes to the information provided.

The digital version of the Nautical Chart Manual can be accessed on the Web using either of the two following addresses:

1. <http://ocsnet.ncd.noaa.gov/mcd/chartman/index.htm>  
or
2. <http://ocsnet.ncd.noaa.gov/mcd.htm>

Attachment

- i. Aids to navigation
  - (1) Application of NM Update Service digital files to production team files

#### **8.2.4 Coast Pilot**

The new cartographer is introduced to the [Coast Pilot publications](#), an important supplement to the nautical chart. This is usually a familiarization assignment with exposure to:

- 1. Functional statement and general orientation
- 2. Coast Pilot content including CFR
- 3. Chart support and discrepancies
- 4. Notice to Mariner actions
- 5. Coast Pilot field inspection

#### **8.2.5 Quality Assurance, Plans and Standards Branch**

The cartographer is introduced to quality assurance procedures, methods for updating and improving documentation, and the MCD chart quality assurance system:

- 1. Functional statement and general orientation including:
  - a. Overview of how the QAPSB quality assures NOS nautical products
  - b. Quality assurance procedures and techniques for updating and improving documentation

#### **8.2.6 Outreach / External Duties**

- 1. Boat show involvements and other related public events

### **8.3 External Formal Training Program**

#### **8.3.1 Non-Branch Training**

A variety of formal training programs are available outside the Branch in addition to the specialized

**Section 8.3.1****NAUTICAL CHART MANUAL**

cartographic training for cartographers in MCD

1. Field training on ship or field party for participation in hydrographic surveying, establishing control, data collection, data processing, and the generation of survey graphics
2. Job-related university courses
3. In-house formal training sponsored by DOC and NOAA
4. Cross training between MCD and other areas within NOS through the Rotational Assignment Program (RAP)

**8.4 Additional Education****8.4.1 External Education**

In addition to the informal and formal scheduled training, cartographers are urged to avail themselves of the many opportunities for personal specialized job-related books, software, and training. The majority of these books, software, and training courses are or are related to:

1. Computer classes
2. Cartography
3. Photogrammetry
4. Management/Supervision
5. Geographic Information Systems (GIS)
6. Information Management
7. Computer Mapping



**NAUTICAL CHART MANUAL - VOLUME 1 - POLICIES AND PROCEDURES**  
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**LIST OF ACRONYMS**

**U.S. Department of Commerce  
Office of Coast Survey**



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**National Oceanic and Atmospheric Administration**

NATIONAL OCEAN SERVICE

Office of Coast Survey

Silver Spring, Maryland 20910-3282

NOVEMBER 30, 2000

MEMORANDUM FOR: All Cartographers  
Marine Chart Division

FROM: Fannie B. Powers  
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: List of Acronyms

Effective immediately, the attachment replaces in its entirety the “List of Acronyms” section in the Nautical Chart Manual, Volume 1, Part 2, Seventh (1992) Edition. The “List of Acronyms” section is located immediately after Chapter 8 in the analog version and can also be accessed on the Web using the following address: <http://ocsnet.ncd.noaa.gov/mcd/chartman/acronyms.htm>

Attachment

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### LISTING OF ACRONYMS

(The page number listed for each acronym is its first occurrence.)

<u>Acronym</u>	<u>Description</u>	<u>Page</u>
3-E	ECONOMY, EFFICIENCY, AND EFFECTIVENESS	2-8
A&D	AREA AND DEPTH SHEETS	4-89
ALWP	ADOPTED AVERAGE LOW WATER PLANE	2-32
AWOIS	AUTOMATED WRECK AND OBSTRUCTION SYSTEM	4-51
C&GS	COAST & GEODETIC SURVEY	xiii
CAB	CUSTOMER AFFAIRS BRANCH	
CCG	CANADIAN COAST GUARD	5-13
CES	CHART EVALUATION SURVEYS	4-4
CFR	CODE OF FEDERAL REGULATIONS	4-70B
CHS	CANADIAN HYDROGRAPHIC SERVICE	1-8
COE	CORPS OF ENGINEERS (SEE USACE)	1-26
COLREGS	INTERNATIONAL REGULATIONS FOR PREVENTING COLLISIONS AT SEA	1-31
CPB	COAST PILOT BRANCH	
CS	CORRIDOR SURVEYS	4-4
CSC	CORRECTED SOUNDING COMPILATION	1-26
DGPS	DIFFERENTIAL GLOBAL POSITIONING SYSTEM	4-40C
DMA	DEFENSE MAPPING AGENCY (SEE NIMA)	
DMAHTC	DEFENSE MAPPING AGENCY HYDROGRAPHIC / TOPOGRAPHIC CENTER (SEE NIMA)	
DOC	DEPARTMENT OF COMMERCE	
DOD	DEPARTMENT OF DEFENSE	1-6
DOS	DEPARTMENT OF STATE	1-31
DR	DESCRIPTIVE REPORT	4-1
ECDIS	ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEM	1-38
EEZ	EXCLUSIVE ECONOMIC ZONE	4-84
ENC	ELECTRONIC NAVIGATIONAL CHART	1-38
EPA	ENVIRONMENTAL PROTECTION AGENCY	4-70
FADS	FISH AGGREGATING DEVICES	5-18
FCC	FEDERAL COMMUNICATIONS COMMISSION	6-14
FE	FIELD EXAMINATIONS	4-5
GCLWD	GULF COAST LOW WATER DATUM	2-29
GEBCO	GENERAL BATHYMETRIC CHART OF THE OCEANS	
GPS	GLOBAL POSITIONING SYSTEM	6-28
GRI	GROUP REPETITION INTERVAL	6-20
HDEG	HYDROGRAPHIC DATA EVALUATION GROUP	4-6
HSD	HYDROGRAPHIC SURVEYS DIVISION	1-36
ICW	INTRACOASTAL WATERWAY	5-22
IGLD	INTERNATIONAL GREAT LAKES DATUM	2-30
IHB	INTERNATIONAL HYDROGRAPHIC BUREAU	1-28
IHO	INTERNATIONAL HYDROGRAPHIC ORGANIZATION	1-28

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IMO	INTERNATIONAL MARITIME ORGANIZATION	1-31
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MHHW	MEAN HIGHER HIGH WATER	2-28
MHW	MEAN HIGH WATER	2-28
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MLW	MEAN LOW WATER	2-28
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MSL	MEAN SEA LEVEL	2-28
MWL	MEAN WATER LEVEL	2-28
NAD	NORTH AMERICAN DATUM	2-25
NALL	NAVIGABLE AREA LIMIT LINE	
NACI	NEW AERONAUTICAL AND NAUTICAL CHARTING INVESTIGATIONS	2-4
NAS	NAVIGABLE AREA SURVEYS	4-4
NAVOCEANO	U.S. NAVAL OCEANOGRAPHIC OFFICE	1-6
NDB	NAUTICAL DATA BRANCH	2-6
NGDC	NATIONAL GEOPHYSICAL DATA CENTER	
NGA	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY	1-7
NGS	NATIONAL GEODETIC SURVEY	2-25
NIMA	NATIONAL IMAGERY AND MAPPING AGENCY (SEE NGA)	
NM	NOTICE TO MARINERS	1-9
NMAS	NATIONAL MAP ACCURACY STANDARDS	2-82
NNSS	U.S. NAVY NAVIGATION SATELLITE SYSTEM	6-28
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	1-6
NOS	NATIONAL OCEAN SERVICE	1-1
NSD	NAVIGATIONAL SERVICES DIVISION	
NTSB	NATIONAL TRANSPORTATION SAFETY BOARD	3-31
OCS	OFFICE OF COAST SURVEY	
ODAS	OCEANOGRAPHIC DATA ACQUISITION SYSTEMS	5-17
OSO	ORIGIN OF SOUNDING OVERLAY	1-26
OSS	OCEAN SURVEY SHEETS	4-5
POD	PRINT ON DEMAND	
QAPSB	QUALITY ASSURANCE, PLANS AND STANDARDS BRANCH	2-1
RSD	REMOTE SENSING DIVISION	2-2
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UPS	UNIVERSAL POLAR STEREOGRAPHIC (GRID)	2-39
USACE	U.S. CORPS OF ENGINEERS (SEE COE)	1-26
USCG	U.S. COAST GUARD	1-8
USCGAUX	U.S. COAST GUARD AUXILIARY	
USGS	U.S. GEOLOGICAL SURVEY	1-23
USO	UNCORRECTED SOUNDINGS OVERLAY	1-26
USPS	U.S. POWER SQUADRON	2-6
UTM	UNIVERSAL TRANSVERSE MERCATOR (GRID)	2-35
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UNITED STATES DEPARTMENT OF COMMERCE  
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Silver Spring, Maryland 20910-3282

APRIL 5, 2004

MEMORANDUM FOR: All Cartographers  
Marine Chart Division

FROM: Fannie B. Powers  
Chief, Quality Assurance, Plans and Standards Branch

SUBJECT: Nautical Chart Manual Index

Effective immediately, the following attachment updates and replaces the Index in the Nautical Chart Manual, Volume 1, Part 2, Seventh (1992) Edition.

# NAUTICAL CHART MANUAL

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## **NAUTICAL CHART MANUAL**

Buoyage Systems, Lateral and Non-Lateral

Aids to Navigation

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